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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,794	11/13/2001	Gerard Howard Davies	ACO2694P1US	9499

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Joan M McGillicuddy
Akzo Nobel Inc
Intellectual Property Department
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Dobbs Ferry, NY 10522-3408

EXAMINER

FLETCHER III, WILLIAM P

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 02/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/936,794

Applicant(s)

DAVIES ET AL.

Examiner

William P. Fletcher III

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2 and 4-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2 and 4-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/24/2005 has been entered.

Response to Amendment

2. To clarify the record at this point in the prosecution, claims 2 and 4-21 are pending.

Response to Arguments

3. Applicant's arguments, see the above-mentioned submission, with respect to the rejections set-forth in the Office action mailed 8/23/2004 have been fully considered and are persuasive. All of the independent claims have been amended to recite that the particle size of the silica sol ranges from 3 to 100 nm. Sano teaches a particle size ranging from 500 to 50,000 nm. Clearly, Sano no longer anticipates the claims. Therefore, these rejection have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Watanabe et al. (US 5,221,497 A) below.

Claim Rejections - 35 USC § 103

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

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claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 21, 2, 3, and 7-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US 3,977,888 A) in view of Watanabe et al. (US 5,221,497 A).

With respect to claim 21, Sano teaches coating steel with an aqueous alkali metal silicate composition, allowing the coated steel to touch dry, and then spraying the coated steel with a film strengthening/hardening solution containing an inorganic salt or silicate (3:61-5:27). The concentrations of the inorganic salt or silicate in the film strengthening/hardening solution taught by Sano fall within the claimed molarity range (5:19-53). Although Sano does not specifically teach this coating as a primer, this is merely an intended use of the process and does not effect the patentability of the claimed process. The preparation and mixing of the components of the alkali metal silicate coating solution taught by Sano reads on the limitations of claim 7, as the degree of mixing and time before application are relative parameters.

Sano teaches that the sol has a particle size between 50 and 50,000 nm and a $\text{SiO}_2/\text{M}_2\text{O}$ mole ratio of 0.5-15. Neither of these ranges anticipate or overlap the claimed ranges of 3-100 and at least 25:1, respectively.

Sano explicitly teaches that the above-mentioned mole ratio determines the viscosity of the coating composition (4:51-55). Further, it is the examiner's position that particle size also effects the viscosity, flow, and coating characteristics of the coating composition. Absent a

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showing of clear and convincing evidence of unexpected results demonstrating the criticality of the claimed ranges, it would have been obvious to one of ordinary skill in the art to modify the process of Sano so as to optimize such result-effective variables through routine experimentation. See MPEP § 2144.05. The examiner acknowledges that *both* of these variables simultaneously effect the viscosity of the coating composition and cites Watanabe as showing a silica sol composition useful for coating metal, having both the particles size and mole ratio claimed by applicant. Consequently, one of ordinary skill in the art would have had a reasonable expectation of successfully arriving at a coating composition having applicant's claimed particle size and mole ratio.

In the alternative, as noted above, Watanabe teaches a silica sol composition that has a $\text{SiO}_2/\text{M}_2\text{O}$ mole ratio of 20-300 and a particle size of 40 to 500 nm (abstract). Both of these ranges overlap those claimed by applicant. In the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a *prima facie* case of obviousness exists. The composition may be coated on a metal substrate, imparting good mechanical and thermal protection of the kind desired by Sano (Watanabe 27:33-29:15; Sano 1:34-51). Consequently, it would have been obvious to one of ordinary skill in the art to modify the process of Sano so as to utilize, as the silica sol, the composition disclosed by Watanabe. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of successfully providing a mechanically and thermally resistant coating on the steel substrate.

With respect to claims 9, 11, and 12, Sano does not teach the applied density of the film strengthening/hardening solution to the coated steel, as recited in claim 9. Such a limitation is directly indicative of the amount of solution applied and such an amount is clearly a result-

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effective variable. Too little solution would not provide the desired hardening of the silicate coating in Sano. Therefore, as indicated above, it is considered obvious and within the ordinary skill of the art to optimize and determine workable ranges of such a variable parameter, through routine experimentation. See MPEP § 2144.05. Therefore, it is the examiner's position that the claimed applied density of the solution to the coated steel, as in claim 9, would have been obvious to one of ordinary skill in the art practicing Sano, through such routine experimentation.

Sano does not teach that the coating, drying, and treatment solution are performed in an on-line process. However, the performance of a process in a continuous on-line manner is considered obvious in the art (*In re Dilnot*, 138 USPQ 248), and thus would have been obvious to do in Sano, with the expectation of achieving the desired treated steel.

Sano suggests that the silicate solution applied to the steel may or may not be dried by heating (5:15-17). This teaching suggests that the drying of the silicate coating can be achieved under room temperature conditions, which would fall in the claimed range. Sano does not teach that the drying occurs using forced air flow. However, it is well established in the art to use forced air to aid and expedite drying, and would have been obvious to one skilled in the art to do so in Sano, in order to aid and expedite the drying of the silicate coating.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US 3,977,888 A) in view of Watanabe et al. (US 5,221,497 A), as applied to claim 21, and further in view of Pluddemann (Re 32,250).

Neither Sano nor Watanabe teaches stabilizing the alkali metal silicate solution in the claimed manner. Pluddemann teaches stabilizing an alkali metal silicate solution with a substituted siliconate, formed and made neutral by ion exchanging (cols. 9-10). The stabilizing

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of Pluddemann reads on the stabilizing of claim 4. It would have been obvious to one of ordinary skill in the art to provide the alkali metal silicate solution of Sano with stabilization, in the manner taught by Pluddemann, in order to provide a stable silicate solution, since such solution stabilization is well known in the art in order to ensure a stable and useful solution with a significant shelf-life.

8. Claims 5, 6, and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al. (US 3,977,888 A) in view of Watanabe et al. (US 5,221,497 A), as applied to claim 21, and further in view of van der Kolk et al. (US 4,888,056 A).

Sano fails to teach that the silicate coating contains a zinc powder and organic resin. However, such additives are typical for silicate coatings for steel and ferrous substrates, especially zinc, as zinc is a known anti-corrosive agent. Van der Kolk teaches coating steel with a protective silicate coating, which further contains zinc powder as an anti-corrosive agent and an organic resin material as a thickening agent (4:16-30 and 4:67-5:2). It would have been obvious to one skilled in the art to add zinc powder and organic resin to the silicate coating material of Sano, with the expectation of providing the expected anti-corrosive benefits and thickening, as is typical for such silicate coating solutions, as shown by van der Kolk.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (571) 272-1419. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (571) 272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WPF 2/18/2008

William P. Fletcher III
Examiner
Art Unit 1762


TIMOTHY MEEKS
PRIMARY EXAMINER